



REPLY RESPONSE UNDER 37 C.F.R. § 1.111

U.S. Application No. 10/616,227

Attorney Docket No. Q76484

Art Unit No. 2828

REMARKS

Reconsideration and allowance of this application are respectfully requested. Claims 1-29 are pending in the present application, of which claims 4, 5, 11 and 15-26 have been withdrawn. The rejections are respectfully submitted to be obviated in view of the remarks presented herein.

Rejection Under 35 U.S.C. § 102(e) - Murray et al.

Claims 1 and 6 have been rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Murray et al. (U.S. Patent No. 6,633,599; hereinafter “Murray”). The rejection is respectfully traversed.

Independent claim 1 recites a laser apparatus comprising, *inter alia*, a block which “has a lens-setting surface which is flat, perpendicular to optical axes of said plurality of laser diodes, and located on a forward side of said plurality of laser diodes at a predetermined distance from said light-emission points, and said collimator-lens array is fixed to said block so that an end surface of the collimator-lens array is in contact with said lens-setting surface.”

The Examiner maintains that Figs. 11 and 12 of Murray teach all of the elements of claim 1. Murray is generally directed toward a laser apparatus with individual emitters (1) and a microlens array (4) as shown in Figs. 11 and 12. Murray’s apparatus includes a heatsink (20) on which a laser diode bar (2) is bonded through a bonding agent (19) (column 3, lines 23-29). Murray’s microlens (4) are also fixed in place by mounting structures (5) that may either contain

a V-groove or may be glued using epoxy to the diode bar (2) (column 2, line 65 to column 3, line 3).

However, there is no teaching or suggestion in Murray of “a lens-setting surface which is flat, **perpendicular to optical axes of said plurality of laser diodes**, and located on a forward side of said plurality of laser diodes at a predetermined distance from said light-emission points, and said collimator-lens array is fixed to said block so that an end surface of the collimator-lens array is in contact with said lens-setting surface,” as recited by claim 1 (emphasis added). Although Figs. 11 and 12 of Murray show microlens (4) being fixed in place by mounting structures (5), Murray fails to teach or suggest the lens-setting surface of the claimed invention. The top surface of Murray’s mounting structure (5) can not be interpreted as the claimed lens-setting surface because **the top surface of the mounting structure (5) is not perpendicular to the optical axes of the emitters (1) or laser diode bar (2)**.

The microlens (4) is fixed to the top of Murray’s mounting surface (5). Although the Examiner contends on page 3 of the Office Action that the top surface of the mounting surface (5) is perpendicular to optical axes of the laser diodes (emitters (1)) and this surface “extend[s] perpendicularly in front of the array as seen in the groove in fig. 12,” this contention is not supported or suggested at all by Murray.

As shown in Murray’s FIGS. 11 and 12, the top face of the mounting structure (5) extends in a direction which is **parallel to optical axes of the laser diodes**. As specifically shown in Murray’s Fig. 11, all of the surfaces of the mounting structure (5) and heatsink (20) are **parallel** to the optical axes of the emitters (1) and laser diode bar (2). Conversely, the claimed

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invention recites a lens-setting surface which is “perpendicular to optical axes of said plurality of laser diodes” (emphasis added). An exemplary and non-limiting example of such a claimed configuration is shown in at least FIG. 8 of Applicant’s invention, in which an end surface (50b) of collimator lens array (50) is mounted on a lens setting surface (11b), the lens setting surface (11b) being perpendicular to optical axes of a plurality of laser diodes.

At least by virtue of the aforementioned differences, Applicants’ claim 1 distinguishes over Murray. Claim 6 is a dependent claim including all of the elements of independent claim 1. Therefore, claim 6 is patentable over Murray for at least the aforementioned reasons as well as for its additionally recited features. Reconsideration and withdrawal of the rejection under 35 U.S.C. § 102(e) are respectfully requested.

Rejection Under 35 U.S.C. § 103(a) - Murray et al.

Claims 12, 13 and 27-29 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Murray. The rejection is respectfully traversed.

Claim 12 recites a method for producing a laser apparatus including the element of “forming in said block a reference surface which is flat, perpendicular to optical axes of said plurality of laser diodes, and located on a forward side of locations at which said plurality of laser diodes are fixed to the block.”

As discussed above, Murray fails to teach or suggest any forming of a reference surface which is flat, perpendicular to optical axes of the plurality of laser diodes, and located on a

forward side of locations at which the plurality of laser diodes are fixed to the block. Therefore, claim 12 is patentable over Murray for at least the aforementioned reasons.

Claim 13 recites a laser apparatus comprising a block “wherein said block has a reference surface which is flat, perpendicular to optical axes of said plurality of laser diodes, and located on a forward side of portions of said block to which said plurality of laser diodes are fixed.”

As discussed above, Murray fails to teach or suggest any reference surface which is flat, *perpendicular to optical axes of the plurality of laser diodes*, and located on a forward side of portions of the block to which the plurality of laser diodes are fixed. Therefore, claim 13 is patentable over Murray for at least the aforementioned reasons.

Claim 27-29 are dependent claims including all of the elements of independent claim 1. Therefore, claims 27-29 are patentable over Murray for at least the aforementioned reasons as well as for their additionally recited features. Reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) are respectfully requested.

Rejection Under 35 U.S.C. § 103(a) - Murray in view of Chiappetta et al.

Claims 2 and 3 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Murray in view of Chiappetta et al. (U.S. Patent No. 6,724,791; “Chiappetta”). The rejection is respectfully traversed.

As discussed above, Murray fails to teach or suggest all of the elements of independent claim 1. Chiappetta does not remedy the deficiencies of Murray. Although Chiappetta discloses a laser module (12) as shown in Fig. 2 which is in thermal contact with a flat surface (58) of a

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cooling element (16), there is still no teaching or suggestion in Chiappetta of “a lens-setting surface which is flat, *perpendicular to optical axes of said plurality of laser diodes*, and located on a forward side of said plurality of laser diodes at a predetermined distance from said light-emission points, and said collimator-lens array is fixed to said block so that an end surface of the collimator-lens array is in contact with said lens-setting surface,” as recited by claim 1 (emphasis added).

At least by virtue of the aforementioned reasons, claim 1 is distinguished over Murray in view of Chiappetta. Claims 2 and 3 are dependent claims including all of the elements of independent claim 1. Therefore, claims 2 and 3 are patentable over Murray in view of Chiappetta for at least the aforementioned reasons based on their dependencies, as well as for their additionally recited features. Reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) are respectfully requested.

Rejection Under 35 U.S.C. § 103(a) - Murray in view of Andrews and further in view of Andrews et al. and Kuniyasu et al.

Claims 7-10 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Murray in view of Andrews (U.S. Patent Number 5,640,188; “Andrews ‘188”) and further in view of Andrews et al. (U.S. Patent No. 5,432,535; “Andrews ‘535”) and Kuniyasu et al. (U.S. Patent Application Publication No. 2002/0018499; “Kuniyasu”). The rejection is respectfully traversed.

As discussed above, Murray fails to teach or suggest all of the elements of independent claim 1. None of Andrews ‘188, Andrews ‘535 and Kuniyasu remedy the deficiencies of

Murray, Andrews '188 and Andrews '535 disclose multiple diode lasers affixed to surfaces and which allow for thermal dissipation. However, Andrews '188, Andrews '535 both fail to teach or suggest "a lens-setting surface which is flat, perpendicular to optical axes of said plurality of laser diodes, and located on a forward side of said plurality of laser diodes at a predetermined distance from said light-emission points, and said collimator-lens array is fixed to said block so that an end surface of the collimator-lens array is in contact with said lens-setting surface," as recited by claim 1 (emphasis added).

Kuniyasu discloses embodiments of a semiconductor laser with a plurality of layers formed on a substrate and which achieves improved heat dissipation characteristics. However, Kuniyasu also fails to teach or suggest "a lens-setting surface which is flat, perpendicular to optical axes of said plurality of laser diodes, and located on a forward side of said plurality of laser diodes at a predetermined distance from said light-emission points, and said collimator-lens array is fixed to said block so that an end surface of the collimator-lens array is in contact with said lens-setting surface," as recited by claim 1.

At least by virtue of the aforementioned reasons, claim 1 is distinguished over Murray in view of Andrews '188, and further in view of Andrews '535 and Kuniyasu. Claims 7-10 are dependent claims including all of the elements of independent claim 1. Therefore, claims 7-10 are patentable over Murray in view of Andrews '188, and further in view of Andrews '535 and Kuniyasu for at least the aforementioned reasons based on their dependencies, as well as for their additionally recited features. Reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) are respectfully requested.

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Rejection Under 35 U.S.C. § 103(a) - Murray in view of Andrews and further in view of Kuniyasu et al.

Claim 14 has been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Murray in view of Andrews '188 and further in view of Kuniyasu. The rejection is respectfully traversed.

As discussed above, none of Murray, Andrews '188 and Kuniyasu, alone or in combination, teach or suggest all of the elements of independent claim 13, and in particular, of a laser apparatus comprising a block "wherein said block has a reference surface which is flat, perpendicular to optical axes of said plurality of laser diodes, and located on a forward side of portions of said block to which said plurality of laser diodes are fixed," as recited by claim 13 (emphasis added).

At least by virtue of the aforementioned reasons, claim 13 is distinguished over Murray in view of Andrews '188 and further in view of Kuniyasu. Claim 14 is a dependent claim including all of the elements of independent claim 13. Therefore, claim 14 is patentable over Murray in view of Andrews '188 and further in view of Kuniyasu for at least the aforementioned reasons based on its dependency, as well as for its additionally recited features. Reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) are respectfully requested.

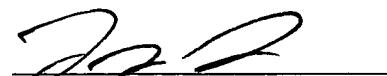
In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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